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A SYSTEM AND METHOD FOR THE PROVISION OF INFORMATION WITHIN
A PREDETERMINED LOCALITY

The present invention relates to a system and method for provision of information within a predetermined locality and, particularly, but not exclusively, to a system and method for providing information to a small computing device within a predetermined locality.

Systems are known for providing information which is specifically associated with a predetermined locality. For example, there have been instances of restaurants providing networks including a console provided on dining tables networked to a central computer. Menu information is provided by the console to diners and diners may select menu items. Menu item data is transmitted to the central computer so that a menu order can be logged and actioned. Such systems are dedicated, hard wired systems. It is necessary for the restaurant to provide the full system infrastructure i.e., the consoles, the central computer and the hard-wiring. This is expensive and lacks versatility.

Wide area networks (WANs), such as the Internet, are also well known. Such networks enable information to be provided for access by users worldwide. The information is not locale specific. It can be any information relating to any subject.

"Small computing devices" are nowadays widely available. By the term "small computing device" we mean laptop computers or smaller, such as palmtop type computers, personal organisers and mobile telephones, for example. These devices usually have fairly specific purposes, particularly the smaller devices. A palmtop-type computer may be used for a diary function, keeping memos, "to do" lists, even word processing. The functions are usually dedicated to the user of the computer, however. Similarly with mobile telephones, their function is one of communication between users. They may also store telephone

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numbers and keep some other records.

Such devices are arranged to be portable and are nowadays, in many countries, ubiquitous.

International Patent Application publication 5 WO9944/07125 discloses a system where local agents broadcast URL's to mobile information terminals which may be mounted in motor vehicles. The mobile information terminal can then access the Internet and download the page designated by the URL. A problem with this system is that 10 it must communicate with the Internet to obtain the information designated by the URL. The information is not obtained from a local agent. Communications to the Internet may be unreliable. Further, they may also be slow.

15 The present invention provides a mobile computing device for receiving information data provided by server computing devices each of which may be arranged to provide different information data, the mobile computing device comprising browser means arranged, when the mobile 20 computing device is within a predetermined area where information data from a server computing device can be received, to receive information data from the server computer, and further comprising presentation means for presenting information produced from the information data.

25 The information is preferably produced directly from the information data provided to the browser means of the mobile computing device. It is not necessary for the mobile computing device to access a further system, such as the Internet, to obtain the information.

30 Preferably, the browser means is arranged to detect when the mobile computing device has entered the predetermined area and is then enabled to receive any information which is being broadcast by the server computer device.

35 The mobile computing device is preferably a small

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computing device, such as a mobile telephone or palmtop computer. The browser means preferably includes operating system software which is loaded onto the small computing device. When a person carrying a small computing device 5 enters the predetermined locality, the mobile computing device may therefore receive any information which an owner of the server computer may wish to broadcast within that predetermined locality. Preferably, the broadcast is by wireless signal. For example, it may be radio, or infra-red, or any other wireless means.

The browser means may include any software which can download information data from the server computing device and present the information on a presentation means (e.g. display or audio outlook) of the mobile computing device. 15 In one embodiment, the browser means may utilise the virtual machine means which is disclosed in Australian Patent Application number 660334/98 (the disclosure of which is incorporated herein by reference), in order to process information data to be received by the mobile 20 computing device and sent from the mobile computing device, as at least part of the browser means. Any suitable software could be used for the browser means, however.

The information is preferably information associated with the predetermined locality, in the sense that it is 25 information that a person specifically wishes to transmit to that specific locality. It would not be communication information such as voice data which is communicated between two phones in two different areas.

The information content is preferably for facilitating 30 a service or product (or both) provided at a locality or associated with the locality. That is, the information content would have some association with the service or product in the sense that it could be, for example, a description of the service or product, could be an 35 advertisement, could be information which the owner of the

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computing device requires to interact with the service or product (e.g., the information could be a menu in a restaurant), the information could facilitate playing a game (where the game is the service or product, e.g., in golf the information could be geographical information or map information displaying the golf course).
5

All owners of small computing devices having the browser software loaded on to them would therefore be able to receive the predetermined locality information when they 10 entered the predetermined locality, on their ubiquitous small computing device which they generally also use for other applications.

The browser software is generic in the sense that any 15 information data which is compatible with the browser software may be transmitted, transmitting any type of information that is desired to the predetermined locality.

Preferably, the mobile computing device may also provide mobile device information data to the server computing device, such as data identifying the mobile 20 device and the owner, for example. In addition, further information data may be transmitted by the mobile computing device to the server computing device. The further information data may relate to information to be used by the server computing device to facilitate an operation 25 associated with the predetermined locality, for example. Preferably, a network is formed between the mobile computing device and the server computing device which allows for the interactive exchange of data (the mobile computing device and server computing device essentially 30 establish a locality based "session" in which information can be exchanged between them).

Preferably, communications between the server computing device and the mobile computing device is direct and there is preferably no intervening network, for 35 example. As discussed above current communications may be

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by way of radio, infra-red, or any other wireless communications. Infra-red may be preferred for reliability.

The present invention further provides a server 5 computing device which is arranged to provide information to a mobile computing device such as discussed above when the mobile computing device is present in the predetermined locality.

The information may be provided in response to the 10 computing device entering the predetermined locality, or broadcast continuously or at predetermined times for any mobile computing device that may be in the predetermined area.

The invention also provides a system which includes a 15 plurality of the server devices and mobile computing devices as discussed above, each of the plurality of server computing devices being arranged to provide information specific to a predetermined locality, so that there are a plurality of predetermined localities where information may 20 be received by a mobile computing device.

The present invention further provides a method of providing information to a mobile computing device comprising the steps of detecting when the mobile computing device enters a predetermined locality and providing 25 information to the mobile computing device when entry to the predetermined locality has been detected.

In this aspect of the invention, the mobile computing device may itself detect when it enters an area where a signal is being broadcast by a server computing device, and 30 then receive a signal to display the information.

Alternatively, the server computing device may detect a (switched-on) mobile computing device entering the area and provide information.

Please note that "detecting" should be read to cover 35 the case where the mobile computing device may already be

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in the area and is switched on so that only then it is detected that the mobile computing device is within the predetermined locality. Further, means may be required to be actuated to enable reception of the information (e.g. 5 pressing a button to enable a "reception" function.

Features and advantages of the present invention become apparent from the following description of embodiments thereof, by way of example, with reference to the accompanying drawings, in which:

10 Figure 1 is a schematic diagram of a system in accordance with an embodiment of the present invention;

Figure 2 is a schematic diagram of a further embodiment of a system in accordance with the present invention, and

15 Figure 3 is a schematic diagram of a further embodiment of a system in accordance with the present invention.

Referring to figure 1, a system in accordance with an embodiment of the present invention is shown and includes 20 server computer devices 1 and 2 which are arranged so as to be able to transmit information data 3, 4 within respective localities, locality 1 and locality 2. Note that although the localities are shown proximate to each other in the drawing they may be widely dispersed. Further, there may 25 be any number of server computers serving any number of localities.

The same reference numerals will now be used to identify similar components of each of the server computing devices 1 and 2. Each server computing device 1, 2, 30 comprises a computer module 25, which may, for example, be a PC, a display 5, a keyboard 6 and a radio transmitter 7.

The keyboard 6 may be used to enter or update information data 3, 4. A server program 26 is loaded onto the computer 4, the server program being arranged to 35 interface with mobile computing devices 10, 11 when the

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mobile computing devices 1, 2 are in the localities 1 or 2.

Each mobile computing device 10, 11, includes a browser program 12. In the illustrated embodiment the mobile computing devices 10, 11 are mobile telephones, but 5 they may be other small computing devices, such as palmtop computers, for example. Each mobile computing device 10, 11 is also loaded with mobile device information data 16, which may identify the mobile computing device 10, 11. Each mobile computing device 10, 11 also includes an input 10 means 13, in the form of a keypad, and a presentation means 14 in the form of a LCD display. The user of the mobile computing device 10, 11 may enter further information 17 via the keypad 13.

When the mobile computing device 10, 11 enters the 15 locality 1 the browser program 12 can detect signals transmitted from transmitter 7 by the server computing device 1. Note that the computing device 10, 11 may need to be switched on to do this. A further keypad operation 13 may be necessary to activate the browser program 12 to 20 detect signals from the transmitter 7. An alternative is that the computing device 10, 11 is transmitting a signal and when it enters the locality 1 this is detected by the server computing device 1 before any signal is transmitted from the server computing device 1 for detection by the 25 mobile computing device 10, 11. A hand shaking routine may also be involved.

Once any hand shaking routine has been completed, the browser program 12 may receive information data from the server computer, and this information is presented on the 30 display 14. The mobile device 10, 11 and computer 1 form a network allowing for the exchange of data between the devices. The system is arranged such that the display of the small computing devices (which are usually much smaller than those of a P.C.) are able to display the information 35 transmitted by the server computer. The server computer

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may transmit the information in a form which is easily processable and presentable by the browser on the small computing device. A system such as WAP (Wireless Application Protocol) may be utilised. You will appreciate 5 that any method of communication may be utilised which enables information to be received and displayed by the small computing device and received from the small computing device by the server computing device.

For example, locality 1 may be a restaurant or dining 10 area. The restaurateur may wish to transmit information relating to the restaurant to mobile computing devices 10, 11 owned by potential diners. This information may, for example, be information on the menu offered at the restaurant, in which case the information data 3 would 15 include information on items on the menu. This information will be received via the browser program 12 and displayed on display 14. Via the keypad 13, the mobile computing device 10, 11 may provide further information data 17 back to the server computing device 1, 2. This further 20 information data 17 may include selections from the menu, for example. In a restaurant situation, therefore, the mobile telephone owner with the browser program 12 installed would be able to receive menu information and transmit selections from the menu to the server computing 25 device. There could also, of course, be an acknowledgment that the order has been received by the server computing device, and, indeed, any other information could be exchanged. Mobile device information data 16 may identify the owner of the mobile telephone, in which case 30 information transmitted from a server computing device 1 could be personalised.

As a further example, locality 2 may be a golf course and the information transmitted by the server computer device may be information relating to the position of the 35 mobile computing device 10, 11 on the golf course and also

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the course layout. There may further be information exchanged between the mobile computing device 10, 11 and the server computing device 2, entering of scores on a score card program, for example, via keypad 13.

5 The browser program 12 is generic and the server program 5 is also generic so that any information data compatible with the system can be transmitted. In other words, using a ubiquitous device like a small computer such 10 as a mobile telephone loaded with the software, information pertinent to any locality served by a server computing device in accordance with the present invention can be received.

The information is locality specific, so that only one set of information data is being received at a time, 15 depending upon the locality of the mobile computing device 10, 11.

Further, programs 20 in the form of JAVA™ applets, for example, may be downloaded to the mobile computing device 10, 11, in order to facilitate functionality.

20 In a refinement, the mobile computing device may be arranged to provide positional information using, for example, the GPS (global positioning satellite) system. This enables the server computer to locate the position of the mobile computing device and alter the information 25 accordingly or provide directions to a service provider or product provider, accordingly. For example, in the restaurant situation described above, where GPS information is provided a server device may be able to advise a waiter of the specific table that the owner of the mobile 30 computing device is sitting at, rather than requiring information on the users position to be input to the mobile computing device, for example. Similarly with the golf course example given above, if the server computing device knows the position of the mobile computing device it can 35 provide accurate information to the mobile computing device

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for the user to determine exactly where he is on the golf course.

Figure 2 illustrates an alternative embodiment.

Similar reference numerals are used for similar components as in the other figures. Server computing device 300 is part of an advertising system. A very large display 28 is connected to the server computing device 300. The very large display may be an advertising hoarding controlled from the computer 25. The information passed from the server computer 3 to the mobile computing device 10 may include advertising information relating to advertising information appearing on the very large display 28. Further, an advertising message on display 28 may be controlled in accordance with information data received from the mobile telephone 10, such as mobile device information data (to personalise the message on advertising hoarding 28 for example) or further information data (so that the advertising hoarding 4 could respond to information being provided by the mobile telephone 10 operator via the keypad 13). Such an advertising system could be employed in a "drive by" situation where a mobile telephone owner is driving by an advertising hoarding in their car.

Figure 3 illustrates a further alternative embodiment, showing another application of the present invention. In this embodiment a server computing device 400 shown diagrammatically and not in any detail is arranged to service a relatively large area 30, such as a shopping mall, for example. The shopping mall is divided into a plurality of localities 31 through 41. Each of these localities is served by the server computing device 400, but in each case, the server 400 may be arranged to broadcast different information to each locality. For example, locality 32 may be a clothing store. The server 400 may be arranged, when it detects the presence of a

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mobile computing device 10 in store 32 to broadcast to that mobile computing device information about the clothing, i.e., price information, type, etc.

5 Area 36 may be a food store. When the server 400 detects the presence of a computing device in area 36 it may be arranged to broadcast information on the type and price of food available.

10 In this case, a plurality of localities are provided for by a single server computing device. This may be extended to any application and it is not limited to a shopping mall area.

15 Note that in the example, information data may be sent to the server computer from the mobile computing devices 10. Information may include, for example, a selection of products. The selection of products could then be delivered to the purchaser in return for payment.

20 It is a simple matter for the server computing device to broadcast separate information to different localities as the mobile computing devices can be broadcast to selectively, in a similar way to mobile phones.

25 Another example of the type of arrangement illustrated and described in relation to figure 3 is an application to a transport terminus, such as, for example, a railway station or an airport. The information broadcast in the transport terminus may be timetable information. The total area could be divided into a number of localities equivalent to, for example, platforms of a railway station or boarding gates of an airport. The appropriate timetable information of a particular platform or boarding gate would 30 be broadcast to that locality to a mobile computer user in that locality, so that they can view the timetable information.

35 In all the above embodiments, the server may be "intelligent" in the sense of being able to recognise a particular individual who has previously visited the

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locality. An identification number of the mobile computing device may have been recorded by the intelligent server, for example. When that identification number is detected again, the server "knows" who the individual is with the 5 mobile computing device. The server can use this to alter the information it broadcasts for a particular individual. For example, in the train, bus or airline terminus embodiment discussed above, the server could, over time, "learn" which particular bus, train or plane the individual 10 uses and broadcast the appropriate information for that individual.

As will be appreciated, there are many different applications for the present invention. Yet another example is an application for entertainment venues as the 15 locality, where the server will transmit program information to the mobile computing device e.g., for concert goers and theatre goers.

A further example is the delivery of information on presentation, i.e. presentation notes of a lecture, being 20 provided to small computing devices of the users in the lecture locality. A further example is the provision of local area maps by a server broadcast to small computing devices of people within that locality. In the former case, the service that is facilitated is the presentation, 25 and in the latter case the service that is facilitated is the provision of geographical information to the person in the locality.

It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made 30 to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

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